

Chapter 16

Crayfish (Parastacidae) and Crabs (Potamonidae) of the Réserve Naturelle Intégrale d'Andringitra, Madagascar

Bako Rabeharisoa

Abstract

Of the six described species of Malagasy crayfish, only one, *Astacoides granulimanus*, was recorded during the survey of the Réserve Naturelle Intégrale d'Andringitra. They were collected in small brooks of the eastern humid forest of the massif. This species was not recorded on the western slopes.

Two subspecies of the crab *Hydrothelphusa agilis*—*H. a. agilis* and *H. a. madagascariensis*—were recorded in watercourses ranging from 4 to 5 in stream order. The sympatric occurrence of these two forms at the same elevations and in the same river system brings into question the subspecific arrangement of this species.

Résumé

Parmi les six espèces d'Ecrevisses malgaches, seule l'espèce *Astacoides granulimanus* a été recoltée lors de la prospection de la Réserve Naturelle Intégrale (RNI) d'Andringitra. Elle a été trouvée dans de petits ruisseaux de la forêt humide du versant Est. En revanche, aucun spécimen n'a été récolté dans les cours d'eau du même type du versant Ouest.

Deux sous-espèces du crabe *Hydrothelphusa agilis*: *Hydrothelphusa a. agilis* et *H. a. madagascariensis* ont été capturées sur les cours d'eau d'ordre 4 et 5 de la RNI d'Andringitra. La présence simultanée des deux sous-espèces à la même altitude et dans le même bassin pose le problème de la valeur taxinomique des deux sous-espèces d'*Hydrothelphusa agilis*.

Crayfish

All named Malagasy crayfish (Crustacea: Decapoda) belong to the family Parastacidae and the genus *Astacoides* Guérin, 1839, and all species are endemic to the island. Madagascar is one of the few sites in the intertropical zone where crayfishes are known. In general, the majority of crayfishes are found in temperate areas, but they are also known in Honduras, Guatemala, New Guinea, Aru and Misol Islands, and northern Australia. No species is known on the African continent or in the Indian subregion. *Astacoides* has a closer

affinity with the Tasmanian genus *Astacopsis* than with any other genus in the world. Although Madagascar and Tasmania are geographically distant, *Astacoides* and *Astacopsis* appear to share a common recent ancestor.

Until a few years ago, the genus *Astacoides* was considered monospecific, with *Astacoides madagascariensis* comprising several subspecies. Currently six species are recognized: *Astacoides crosneri* Hobbs, 1987; *A. petiti* Hobbs, 1987; *A. granulimanus* (Monod & Petit, 1929), *A. madagascariensis* (Edwards & Audouin, 1839), *A. caldwelli* (Bate, 1865), and *A. betsileoensis* (Petit,

1923). Their vernacular Malagasy names vary according to species and local dialects: *orana*, *orambanonga*, *orambato*, and *oramboro*.

Methods

Collections of crayfish within the Réserve Naturelle Intégrale (RNI) d'Andringitra were made by hand in small tributaries (stream order 1) of larger streams and rivers. Specimens were caught under rocks and inside many-galleried holes in the shallow streams. Water flow was slow, ranging from 1 to 3 liters per second. See Chapter 9 for further information on collecting sites and information on stream order.

Results and Discussion

Among the six crayfish species recorded in Madagascar, only one, *Astacoides granulimanus*, was collected in the RNI d'Andringitra. Specimens were obtained at altitudes ranging from 750 (nine specimens) to 1650 m (two specimens) (Fig. 16-1). The highest previous altitudinal record for crayfishes on the island is 1650 m (Hobbs, 1987). The particular conditions in the RNI d'Andringitra region, clear fresh forest streams at high altitude, presumably account for its local presence. The water systems of the upper mountain zone of the reserve are generally a series of falls between shelves. Presumably crayfishes find their way around waterfalls by passing on solid ground. *Astacoides granulimanus* has the broadest distribution of any Malagasy crayfish, from near Antananarivo south to the Farafangana region (Hobbs, 1987). This species is relatively common in the Ikongo Forest, northeast of RNI d'Andringitra (Hobbs, 1987).

Astacoides are abundant in shallow freshwater with pH ranges of 4–6. *Astacoides* attain a relatively large size; adults range from 25 to 30 cm in total length and weigh between 100 and 130 g. They are nocturnal or crepuscular. The geographic range of *Astacoides* appears to be from Anjozorobe in the north (northeast of Antananarivo) south to the Isaka River, a tributary of the Efaho River (northeast of Tolagnaro), for a total distance of about 700 km along the eastern coast. In the east, crayfish occur at altitudes from 500 to 1700 m, and in westward drainages they are concentrated in small high-mountain streams (1400 to 1700 m). Compared to other tropical crayfish, the

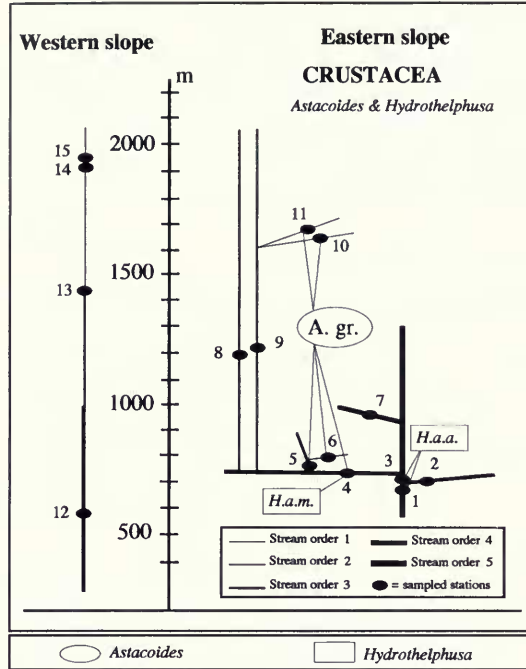


FIG. 16-1. Altitudinal distribution of *Astacoides* and *Hydrothelphusa* in the RNI d'Andringitra on the basis of 11 sites on the eastern slopes and four sites on the western slopes. Key to species: A. gr.—*Astacoides granulimanus*; H.a.a.—*Hydrothelphusa agilis agilis*; and H.a.m.—*H. a. madagascariensis*.

Malagasy species appear to live in the lowest altitudes and highest temperatures.

Crabs

Methods and Results

Crabs were collected either by searching under rocks or using worms at the same collecting sites reported for insects (see Chapter 9). Only one species, *Hydrothelphusa agilis* (Decapoda: Potamonidae: Hydrothelphusinae) was captured in the RNI d'Andringitra, at stations 2 and 3 on water of stream orders 4 and 5.

On the basis of keys provided in Bott (1965), the specimens are composed of two different subspecies, *H. a. agilis* and *H. a. madagascariensis* (Table 16-1). *Hydrothelphusa a. agilis* was caught using worms in stillwater zones of streams and *H. a. madagascariensis* was collected by hand under rocks in stream riffles. These two subspecies were not sympatric at any station, although they were

TABLE 16-1. Distribution by station of *Hydrothelphusa* crabs captured in the RNI d'Andringitra. For information on stations see Chapter 9.

Station no.	Subspecies	Males	Females
2	<i>Hydrothelphusa agilis agilis</i>	3	3
3	<i>Hydrothelphusa agilis agilis</i>	3	0
4	<i>Hydrothelphusa agilis madagascariensis</i>	4	3

present in the same elevational zone. Whether they represent distinct taxa or two stages of the same species with different morphology and ecology must be determined.

Literature Cited

BOTT, R. VON. 1965. Die Süßwasserkrebsen von Madagaskar (Crustacea, Decapoda). Bulletin Muséum National d'Histoire Naturelle, 2nd ser., 37: 335-350.

HOBBS, H. H. 1987. A review of the crayfish genus *Astacoides* (Decapoda: Parastacidae). Smithsonian Contributions to Zoology, 443: 1-49.